

CHAPTER 1

EARTH, MOON, AND SUN

SECTION 1-1

Earth in Space (pages 14-21)

This section explains what causes day and night and what causes the cycle of seasons on Earth.

► Days and Years (pages 15-17)

1. The study of the moon, stars, and other objects in space is called _____.

Match the term with its definition.

Term	Definition
_____ 2. axis	a. The movement of one object around another object
_____ 3. rotation	b. The imaginary line that passes through Earth's center and the North and South poles
_____ 4. revolution	c. The path of an object as it revolves around another object in space
_____ 5. orbit	d. The spinning motion of a planet around its axis

6. Each 24-hour cycle of day and night is called a(n) _____.

7. Why is an extra day added to February every four years? _____

CHAPTER 1, Earth, Moon, and Sun (continued)

8. What causes day and night? _____

► Seasons on Earth (pages 18–21)

9. Why is it warmer near the equator than near the poles? _____

10. Why does Earth have seasons? _____

11. Circle the letter of each sentence that is true when the Northern Hemisphere has summer.

- a. The Southern Hemisphere is tilted away from the sun.
- b. The Northern Hemisphere is tilted away from the sun.
- c. The Southern Hemisphere is tilted toward the sun.
- d. The Northern Hemisphere is tilted toward the sun.

12. What is latitude? _____

13. Circle the letter of each sentence that is true about Earth's seasons.

- a. Earth is closest to the sun when it is summer in the Northern Hemisphere.
- b. The hemisphere that is tilted away from the sun has more daylight than the other hemisphere.
- c. When it is summer in the Northern Hemisphere it is winter in the Southern Hemisphere.
- d. In December, there are fewer hours of daylight and less direct sunlight in the Northern Hemisphere.

Name _____ Date _____ Class _____

14. Each of the two days of the year when the noon sun is overhead at either 23.5° south or 23.5° north is called a(n) _____.
15. Each of the two days of the year when neither hemisphere is tilted toward or away from the sun is called a(n) _____.
16. Complete the table.

Earth's Seasons			
Day in Northern Hemisphere	Approximate Date Each Year	Length of Daytime	Hemisphere That Is Tilted Toward the Sun
Summer solstice			
Autumnal equinox			
Winter solstice			
Vernal equinox			

SECTION
1-2

Phases, Eclipses, and Tides
(pages 24-34)

This section explains what causes phases of the moon, what causes eclipses, and what causes the tides.

► **Introduction** (page 24)

1. What causes the phases of the moon, eclipses, and tides? _____
- _____

► **Motions of the Moon** (pages 24-25)

2. Circle the letter of each sentence that is true about motions of the moon.
- a. The moon revolves around the Earth once a year.
 - b. The "near side" of the moon always faces Earth.
 - c. The moon rotates slowly on its axis once every 27.3 days.
 - d. The moon's orbit around Earth is an oval shape.

CHAPTER 1, Earth, Moon, and Sun (continued)

► Phases of the Moon (pages 25–27)

3. The different shapes of the moon you see from Earth are called _____.

4. How often does the moon go through a whole set of phases? _____

5. What does the phase of the moon you see depend on? _____

6. Complete the table about phases of the moon.

Phases of the Moon	
Phase	What You See
New moon	
First quarter	
Full moon	
Third quarter	

► Eclipses (page 27)

7. When the moon's shadow hits Earth or Earth's shadow hits the moon, what occurs? _____

8. What are the two types of eclipses?

a. _____ b. _____

► Solar Eclipses (page 28)

9. The darkest part of a shadow is called the _____.

Name _____ Date _____ Class _____

10. What happens to cause a solar eclipse? _____

11. The larger part of a shadow, less dark than the umbra, is called the

_____.

12. Circle the letter of each sentence that is true about solar eclipses.

- a. People in the umbra see only a partial solar eclipse.
- b. During a partial solar eclipse, part of the sun remains visible.
- c. During a total solar eclipse, the sky is dark.
- d. People in the penumbra see a total solar eclipse.

► Lunar Eclipses (page 29)

13. What is the arrangement of Earth, moon, and sun during a lunar

eclipse? _____

14. Circle the letter of each sentence that is true about lunar eclipses.

- a. You are more likely to see a total solar eclipse than a total lunar eclipse.
- b. A lunar eclipse occurs at a full moon.
- c. During a lunar eclipse, Earth blocks sunlight from reaching the moon.
- d. A partial lunar eclipse occurs when the moon passes partly into the umbra of Earth's shadow.

► Tides (pages 32-34)

15. The rise and fall of the level of the ocean are called _____.

16. What force pulls the moon and Earth toward each other?

17. Why do tides occur? _____

CHAPTER 1, Earth, Moon, and Sun (continued)

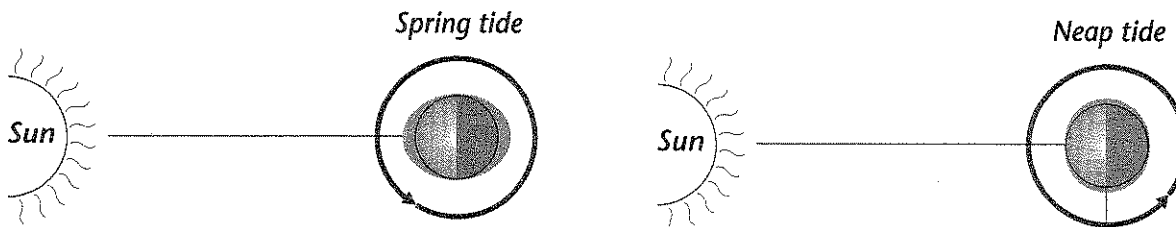
18. Circle the letter of each sentence that is true about tides.

- a. The point on Earth that is closest to the moon has a high tide.
- b. Every location on Earth has two high tides per month.
- c. A low tide occurs at the point on Earth farthest from the moon.
- d. The point on Earth farthest from the moon has a high tide.

19. What is a spring tide? _____

20. What is a neap tide? _____

21. On each of the illustrations below, draw a moon to show its position at a spring tide or at a neap tide.



22. Circle the letter of each of the phases of the moon when a spring tide occurs.

- a. new moon b. first quarter c. full moon d. third quarter

23. Is the following sentence true or false? Sometimes the effects of ocean tides extend far up rivers. _____



Reading Skill Practice

By looking carefully at illustrations in textbooks, you can help yourself understand better what you have read. Look carefully at Figure 6 on page 27. What important idea does this figure communicate?

SECTION
1-3

Rockets and Satellites

(pages 35-38)

This section explains how rockets travel in space and describes what satellites and space stations are used for.

► How Rockets Work (page 35)

1. Why does a rocket move forward? _____

2. For every force, or action, there is an equal and opposite force, or _____.

► Multistage Rockets (page 36)

3. How many stages do multistage rockets have? _____
4. What happens to each stage when it uses up its fuel? _____

5. What did the development of multistage rockets make possible? _____

► Artificial Satellites (pages 36-37)

6. What is a satellite? _____

7. Circle the letter of the first artificial satellite launched into space.
a. Skylab b. Explorer 1 c. Sputnik 1 d. Mir

CHAPTER 1, Earth, Moon, and Sun (continued)

8. What are four uses of satellites and space stations?
 - a. _____
 - b. _____
 - c. _____
 - d. _____
9. What does it mean when a satellite is in a geosynchronous orbit? _____

10. Circle the letter of each sentence that is true about satellites in geosynchronous orbits.
 - a. They seem to hover over a given point on Earth.
 - b. People can live on them for long periods.
 - c. They are used to map weather patterns.
 - d. People can find them on Earth's surface.
11. A large satellite in which people can live for long periods is called a(n) _____.
12. What are the United States, Russia, and many other countries cooperating to build in space? _____

► Space Shuttles (page 38)

13. Why are space shuttles called "shuttles"? _____

14. What would be the ideal vehicle to launch people and cargo into space?

15. Is the following sentence true or false? Since 1981, space shuttles have been the main way that the United States launches astronauts and equipment into space. _____

SECTION

1-4

Earth's Moon

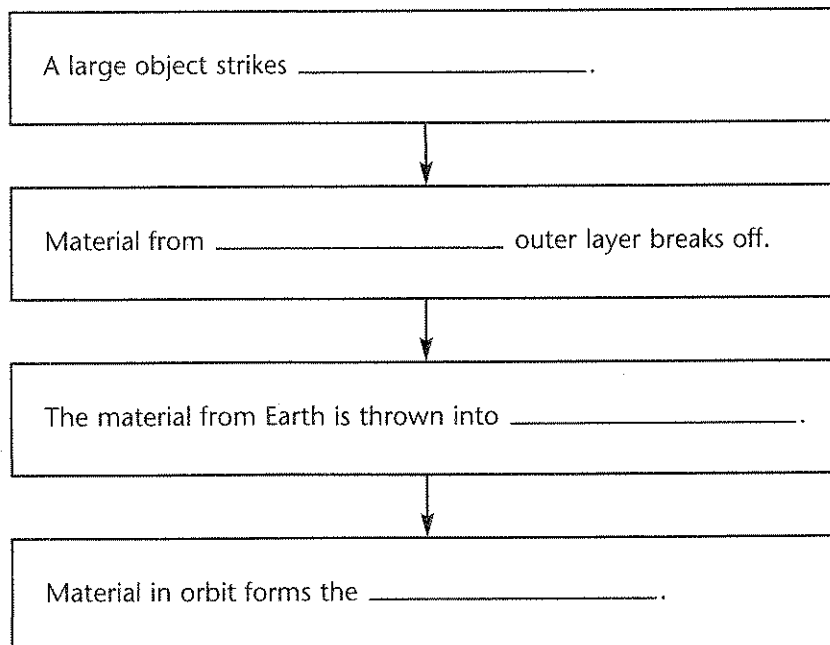
(pages 39-44)

This section describes the features of the moon that can be seen with a telescope. It also describes the missions to the moon.

► The Structure and Origin of the Moon (page 40)

1. Circle the letter of the approximate size of the moon.
 - a. about twice the size of Earth
 - b. about half Earth's diameter
 - c. about the size of Hawaii
 - d. about one quarter Earth's diameter
2. Complete the flowchart about the collision theory of the moon's origin.

A Theory of the Moon's Origin



► Looking at the Moon From Earth (pages 40-41)

3. Who made a telescope in 1609 that allowed him to see details of the moon nobody had ever seen before? _____

CHAPTER 1, Earth, Moon, and Sun (continued)

4. Name three features on the moon's surface.

a. _____

b. _____

c. _____

5. Round pits on the surface of the moon are called _____.

6. What are craters on the moon caused by? _____

7. Circle the letter of the phrase that best describes maria.

a. Highland peaks that cast dark shadows

b. Low, dry areas that were once flooded with molten material

c. Vast oceans that cover much of the moon

d. Craters made from exploded volcanoes

► Missions to the Moon (pages 42–44)

8. Which president of the United States launched an enormous program of space exploration and scientific research in the early 1960s?

9. Circle the letter of the spacecraft that flew into orbit around the moon in July, 1969.

a. *Surveyor*

b. *Sputnik 1*

c. *Skylab*

d. *Apollo 11*

10. Who was the first person to walk on the moon? _____

11. What did Neil Armstrong say when he took his first step onto the moon?

Name _____ Date _____ Class _____

12. How have scientists learned about the material that makes up the moon's surface? _____

13. How do scientists know that the moon's surface once was very hot?

14. What did scientists conclude from moon rocks that had been broken apart and then reformed? _____

15. Is the following sentence true or false? The interior of the moon remains very hot. _____

16. Is the following sentence true or false? Seismometers detected extremely strong moonquakes on the moon. _____

17. Circle the letter of each sentence that is true about the far side of the moon.

- a. It is almost completely covered with maria.
- b. It is rougher than the near side.
- c. It has few maria.
- d. It is very smooth with no visible craters.

18. In 1998, what did the *Lunar Prospector* discover about the moon's poles?

